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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/809,421	03/26/2004	Jin Ki Kim	PAT 980-2	7842
26123	7590	07/13/2005	EXAMINER	
BORDEN LADNER GERVAIS LLP WORLD EXCHANGE PLAZA 100 QUEEN STREET SUITE 1100 OTTAWA, ON K1P 1J9 CANADA			HUR, JUNG H	
			ART UNIT	PAPER NUMBER
			2824	

DATE MAILED: 07/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/809,421

Applicant(s)

KIM, JIN KI

Examiner

Jung (John) Hur

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |                                                                                                                                                       |                                                                                         |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                                                           | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>3/26/04, 6/22/04</u> . | 6) <input checked="" type="checkbox"/> Other: <u>search history</u> .                   |

### **DETAILED ACTION**

1. Claims 1-23 are pending in the application.

#### ***Information Disclosure Statement***

2. Acknowledgment is made of applicant's Information Disclosure Statement (IDS) Form PTO-1449, filed 26 March 2004 and 22 June 2004. The information disclosed therein was considered.

#### ***Specification***

3. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

The abstract of the disclosure is objected to because it uses a phrase "is disclosed" in the first line, which can be implied. It is suggested that, in the first line, "is disclosed" be deleted and "having" be replaced with --has--. Correction is required. See MPEP § 608.01(b).

#### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-10, 14-17 and 21-23 are rejected under 35 U.S.C. 102(b) as being anticipated by Voelkel (U.S. Pat. No. 6,108,227).

Regarding claims 1-3, 5-8, 16, 17, 22 and 23, Voelkel, for example in Fig. 5, discloses a hybrid content addressable memory array comprising: a first memory portion (left portion) having a first type (ternary) of content addressable memory cells arranged in rows and columns; a second memory portion (right portion) having a second type (binary) of content addressable memory cells arranged in rows and columns, the second type of content addressable memory cells being electrically coupled to the first type of content addressable memory cells (via MATCH line and MWL); wherein the first memory portion and the second memory portion include matchlines (MATCH line), each matchline of the first memory portion (the section of MATCH line in the ternary portion) being coupled to the first type of content addressable memory cells, and each matchline of the second memory portion (the section of MATCH line in the binary portion) being coupled to the second type of content addressable memory cells; wherein the first type of content addressable memory cells include SRAM based (Fig. 7, as applied to Fig. 5) ternary content addressable memory cells and the second type of content addressable memory cells include SRAM based (Fig 7, as applied to Fig. 5) binary content addressable memory cells (see Fig. 5; also note column 4, lines 13-21 which discloses conventional alternate embodiments of CAMs having binary and ternary portions).

Regarding claim 4, Voelkel further discloses, as an alternative, that the matchlines of the first memory portion and the matchlines of the second memory portion are interleaved with each

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other (see for example column 7, lines 5-23 in which the ternary and binary types are arranged on a row-by-row basis, resulting in interleaved matchlines).

Regarding claims 9, 10 and 15, Voelkel further discloses that at least one of the first and the second type of content addressable memory cells include configurable (via MODE signal) ternary- binary content addressable memory cells; that the first type of content addressable memory cells and the second type of content addressable memory cells of a row are coupled to a logical matchline (a common MATCH line for one row in each portion; see Fig. 5).

Regarding claims 14 and 21, Voelkel further discloses, as an alternative, that the first type of content addressable memory cells and the second type of content addressable memory cells of a column are coupled to common searchlines (see for example column 7, lines 5-23 in which the ternary and binary types are arranged on a row-by-row basis, resulting in common search lines, for example, Cy, Cy\_ in Fig. 5).

### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 11-13 and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Voelkel (U.S. Pat. No. 6,108,227) in view of Pereira (U.S. Pat. No. 6,191,970).

Voelkel discloses a hybrid content addressable memory array as in claims 10 and 15 above, with the exception of the logical matchline including a first matchline segment and a

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second matchline segment (or at least two matchline segments), wherein the first type of content addressable memory cells are coupled to the first matchline segment and the second type of content addressable memory cells are coupled to the second matchline segment.

Pereira, for example in Fig. 4, discloses a logical matchline (including ML\_row) including a first matchline segment (ML\_a) and a second matchline segment (ML\_b) for a row of content addressable memory cells (CAM CELLS in Fig. 4).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to segment the content addressable memory cells and therefore the row matchline of Voelkel into at least two segments, as in Pereira, such that, as a reasonable arrangement, the ternary portion would be coupled to a first matchline segment and the binary portion would be coupled to a second matchline segment, for the purpose of reducing power consumption associated with precharging match lines during compare operations (see for example Pereira, column 1, line 65 through column 2, line 2; note that Voelkel also discloses, for example in column 9, lines 59-63, precharging matchlines).

### *Conclusion*

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Wong et al. (U.S. Pat. No. 6,243,280) discloses segmented match lines.

Hata (U.S. Pat. Appl. Pub. No. 2002/0080638) discloses a configurable CAM.

Aadsen et al. (U.S. Pat. Appl. Pub. No. 2005/0138278) discloses a binary/ternary CAM.

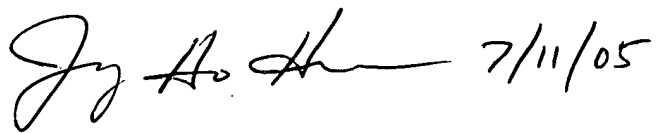
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9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jung (John) Hur whose telephone number is (571) 272-1870.

The examiner can normally be reached on M-F 6:30 AM - 3:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Elms can be reached on (571) 272-1869. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jung (John) Hur  
Patent Examiner  
Art Unit 2824

jhh